TRADE TEACHING IN THE BOOT AND SHOE INDUSTRY

By Arthur D. Dean,
Chief of Division of Trades Schools, New York State Education Department, Albany, N. Y.

The need of special training for the professional man is universally acknowledged, and we recognize its value to the artisan and the skilled craftsman in woodworking, plumbing, blacksmithing, etc. It is a well-established truth also that special education is desirable and necessary for those who are concerned with making the whole of a product or with such part of it as involves a sequence of operations.

Naturally, we form our opinion of what technical and industrial schools can do from what they have done for the machine and building trades. It has not yet been demonstrated that they are indispensable to all industries, especially those which, like the shoe industry, have been divided and subdivided so that the operator comes in contact with only a fractional part of the product. It is a difficult problem to discover the kind of training which shall be of direct value to the vast majority of workers who are doing piece work on automatic machines, or who perform a single operation of the one hundred and one of the factory, those who apparently require in their work the knowledge of that single operation only, a training in which it may take but a day to master and at the most, but a few months. The question then is: Has the performer of one operation on the machine day in and day out no need of special training for the daily work apart from the actual shop experience?

It is such an industrial and social question as this which makes the study of what is being done and can be done educationally for shoe workers of peculiar interest, for the shoe industry is a worthy example of the extent to which differentiation of operations can be carried. This differentiation is the inevitable result in other important industries and the solution of the educational problem in this industry ought to serve, in some measure at least, as a guide for all those which have similar minute divisions of labor.

Outside of a class in pattern drafting in a Montreal institution,

a course in leather at Pratt Institute, and evening classes in pattern drafting and upper leather cutting in three Young Men's Christian Associations, little has been attempted in America in education for shoe workers. Two Massachusetts high schools are endeavoring to give their pupils an idea of the shoe industry. Through the accounting end of the commercial course, the Lynn High School has made considerable progress. The local business firms contributed samples of everything which goes into the making of a shoe. One firm gave samples of shoes in various stages of construction. The value of this exhibit is $250, and it has served as a start towards a commercial museum. The head of the commercial instruction has made a careful investigation of the accounting part of the shoe business, and has put in a full set of shoe manufacturing sheets in the bookkeeping classes. Actual business transactions are made throughout the work, and care is taken to conform with the methods of the best shoe factories in the city. Pupils make out a weekly payroll, figure out the cost of production, etc. Throughout the course extensive use is made of the shoe exhibit, so that pupils associate properly the technical names and the materials themselves.

In the Brockton High School there is a similar exhibit of shoe parts and materials. At a personal expense of $400 a shoe manufacturer exhibited a line of shoes, arranged and labeled to show the process of manufacture in sequence. For the next school year an elective course is planned, dealing largely with the historical side of the boot and shoe industry. It will involve the evolution of the shoe, the development of the shoe industry in the world and in the United States, the history of leather making, the processes of tanning, the problems of making, transporting and selling shoes and other similar topics.

In this connection it may be well to suggest that chemistry, mechanics and mechanical drawing are closely related to the shoe industry. In chemistry, for example, a study of the chemical bleaches, such as sugar of lead, oxalic acid and ammonia and of the weight-giving adulterations such as barium chloride and glucose; study of where chemical action ends and physical absorption begins in the process of vegetable tannage; likewise a study of chrome tannage, patent and enameled leathers, stains and blackings would be of value.

In mechanics would it not be possible to have a consolidated

lasting machine, a pulling-over machine and other complicated machines which are built with mechanical movements like cams, levers, screws, inclined planes, etc., in the physical laboratory when the boys are studying mechanics, and to let them analyze the actions? In mechanical drawing the boys might make drawings of machine parts which are related to the shoe machines, make drawings which will assist in pattern designing, determine the superficial area of a plane surface with reduction and enlargement of patterns, etc., realizing, of course, that the pattern drafting is to the shoe worker what mechanical drawing is to the mechanic.

At present the major part of the training for shoemaking is being carried on in the shoe factories themselves. A prominent shoe manufacturer has stated that each factory is a trade school, but as a trade school, each is limited in the number of its students by the personal interest of the superintendent in his employees. Undoubtedly it is true that the shoe factories are making their own help, and so long as shoe factories are the only places in America that are training shoe workers it will be impossible to give any description of the present status of shoe education in America other than that already mentioned.

The country factory possibly comes nearer to being a trade school than the larger city plant. It is near the source of raw material and finds little difficulty in obtaining help. The so-called "cheap labor" (and it is cheap so far as wages go) is taken from the farms and woods with absolutely no conception of shoe work, and after six months' training is fairly competent in some one part of the work. By this time the worker has discovered that the country factory pays only about one-half what the big city factories are paying, and there is a second migration to the place of higher pay. In this way the country factories, as well as the plants where the cheapest shoes are made, are training grounds for the large factories. The system may not be commendable, but results are surprisingly effective.

Factories in towns at a distance from larger industrial centers complain of the loss of their good material as soon as the workers get a general knowledge of the work. "Stealing a trade" is the common term in the shoe industry. If a young man wishes to enter the shoe business he begins work in an open shop, usually in some small place away from the great shoe centers. It is not unheard of

for a man to obtain half a dozen different jobs in a fortnight, picking up a little knowledge of the work in each before being discharged for incompetency. When he has gained some skill he moves to the larger factory, where he pretends to be a skilled workman, and very often during the busy season is able to hold his job because of the scarcity of help. By the time the rush season is over he has really learned the trade and runs no more risk of being discharged than any other workman. Associations of this sort, now generally universal in the shoe industry lead the worker to learn the operation of some particular machine. Many skilled machine workers have picked up their trade in this fashion.

In turn, the city factories steal workmen from each other, for the large city plants cannot make their own help as well as the smaller plants in the country or the plants where cheap shoes are made. So agents are sent out, and men and women workers are taken from their employment in the factory where they have learned the trade and are pressed into service in some other. This is not as difficult as it may seem, for the many divisions and subdivisions of shoemaking render it possible to separate the unskilled labor most scientifically from the skilled. Men without a technical knowledge of shoemaking are employed in the capacity of shoe operatives engaged in a single specific operation.

Advance in a factory is not prohibited by modern shop organization. In almost any shoe factory in a New England state the manager can point out men in the best places who have started in the lowest positions and reached their present one by their own efforts alone. The boy may start in the cutting room on trimmings, heel stays or tongue, but if he shows that he can use judgment in placing patterns and cutting stock up cleanly and economically, it will be but a few seasons before he will be put to cutting tops or outsides. These points are made to show that advance is due to individual effort and ambition rather than to definite organized instruction such as would be given in a school. A trade is, then, not taught but picked up through keen observation and natural ability. But the average young man is held to one branch by economic pressure. It cannot be expected that, if he receives good wages under the piece-work system, he would leave one machine to learn to operate another where he would receive less money, being less skilled at the new work.

A brief description of education for shoe workers in other countries is in order. Such education has been developed in England more than in any other country, and can best be brought together under three groups: First, special shoe schools for shoe workers; second, special courses in existing technical schools for instruction in shoemaking and leather manufacturing; third, evening continuation schools.

The leather trade school at Bethnal Green, London, is of the first type. Free instruction is given in complete shoemaking, and one can become a very good shoemaker if sufficient time is given. The management of this school is vested in a general committee of representatives of the city and guilds of London Institute, the livery companies, and the Boot and Shoe Manufacturers' Association in proportion to the amount of their annual contributions. The school has the close supervision of an advisory committee, which investigates the technical work done as well as the methods of teaching.

It is suggestive that nearly fifty per cent of the teachers are graduates of the school. The school authorities believe that the training of teachers in their own school has assisted very materially in making the school a success, as the teachers follow the lines already laid down more quickly than expert craftsmen. While the school has a few day students, the majority attend at night. Special arrangements are made for teaching day students, through engaging practical men from various factories to give special instruction for a few hours one day a week. The machinery has been loaned by manufacturing concerns and donations of materials, such as leather and lasts are constantly being made to the school. One dollar entitles a student to attend any evening class for the whole session of three terms of thirty-nine weeks. The school is attempting to place before the students the general outline of the whole industry and at the same time to give a deep and wide instruction in one branch so that graduates may make immediate use of their skill.

Probably the best illustration of a school of the second class is that of the Leicester Technical School. This is one of the largest schools in the United Kingdom. Instruction is given in shoe manufacturing, hosiery manufacturing, plumbing, carpentry, architecture, etc. The shoe manufacturing classes are arranged in preliminary and advanced classes in pattern cutting, and lectures are given on

upper cutting, stitching room methods, bottom stockroom, lasting and finishing. After students have received important notes of the lectures in each department, a practical demonstration is given of fitting, stitching and lasting on donated machines. The British United Shoe Machinery Company contributes the machinery and sends its experts to give the practical demonstrations. Once a week a lecture by prominent shoe manufacturers is given on general subjects, such as "The Bone and Muscular Construction of the Foot," "Last Making," "Shoe Machinery Design," "Leather Manufacture," "Estimating the Cost of the Upper and Bottom Stock of a Shoe," etc. These classes are to enable workers not only to make a part of the shoe, but to learn the processes of the other departments and the technical names of each part of the shoe, thus producing better foremen and managers or superintendents.

The evening continuation movement of the Northamptonshire County Council illustrates the third type. This institution conducts classes in eight shoe centers. Various centers are grouped around one larger one with a full-time paid instructor at its head. At present schools have been organized at Northampton, Kittering, Wellingborough, Rushden, Irtlingborough, Raunds, Long Buckby. Instruction is given in the evening, and eighteen classes a week are handled at distances extending over thirty miles. These have a total enrolment of about three hundred students and a teaching force of three instructors. The fee is about sixty-two cents for the season from September to May.

The teaching is adapted to each place according to the grade of shoe made there. It is not expected that the shoe workers will be acquainted with the whole trade. However, there are some things in the shoe trade that an intelligent worker with a desire to advance must know. These are taught in a general section. At the same time the men desire to qualify as practical men in one branch. The school authorities allow them to select any one subdivision, but do not teach them any special operation by itself. For example, if a young man wishes to qualify as a laster, he is not permitted to be taught only how to tack a shoe upon a last; the school expects him to show that he understands thoroughly the principles upon which it is done and its effect upon subsequent operations. The course is divided into three years, although few students get through the three divisions in three years.

A comprehensive series of examinations has been inaugurated for stimulating the students. They are divided into a technical side and a practical side. If a student wishes to qualify, for example, as a pattern maker, he first attempts a written examination and then takes a practical examination in an ordinary workshop upon ordinary work. There is a great deal of elasticity in the teaching, according to the class and work of the students. The amount of time given varies in different towns. The average is about two evenings a week, depending largely upon what the local committee considers the best for that place. There is one point, however, which is always made, that every student must have some theoretical instruction, otherwise the school would produce the same class of workmen as are now in the business, instead of raising the standard of the men employed. To give the boy an efficient training and to give the man, who has probably lost educational opportunities, some chance of supplying what he has lost, is the educational ideal. Out of a hundred students taken at random twenty-nine have become manufacturers or retailers or managers since they attended the classes, and thirty-seven have become pattern makers. There are very few of the men who have not received benefits from the continuation school work.

Another important school is the Royal Prussian Shoe Technical School at Wermelskirken, Germany. It was founded by the City of Wermelskirken. It is in the Province of Dusseldorf and is supervised and supported by the German Government. The school is conducted by a director, who understands the needs of the shoe industry, and four experienced teachers, all of whom are experts in their several lines. The main purpose of the school is to educate superintendents, foremen of the bottoming and stitching rooms and pattern makers. The course is so laid out that the graduates can take any position in any branch of the shoe industry. The school runs for eight hours a day for forty-six weeks in a year. The time required to fit a man for the superintendency is two years, while one year is all that is necessary for the foremanship of a bottoming or stitching room. It takes six months to properly train a pattern maker. The cost per course for half the school year is approximately thirty dollars. In other words, the training for a superintendent, who ought to take the courses in the stitching room and bottoming room, and in pattern making, would cost $360. The

upper course, as it is called, consists in trying different styles of shoe patterns, cutting patterns and setting various combinations of different patterns. The cutting course consists in laying out of the patterns of different sizes on various kinds of leather in order that the most economical system of cutting may be determined. Accompanying the work in the cutting of shoes are lectures about the different processes of tanning, upper shoe stitching, calculating stitching cost and the cost of shoe findings, with the accompanying calculations of wages. The bottom course consists of drawing different soles, insoles, and heels, cutting soles, designing cutters and working out the curvature for the heel knives. It also includes a study of the dyeing and tanning of sole leather, and calculating the cost of sole leather as estimated by the waste and the wages paid. The finishing course includes the finishing by the various special machines, the ironing of uppers, their blacking and finishing, as well as the study of various formulæ for preparing inks, dressings and stains.

In the United States there is need of special schools for those who are to enter the shoe industry. An industry which employs nearly 150,000 people, which has a working capital of $125,000,000 and makes a yearly product valued at $320,000,000, is surely as worthy of having special schools for the training of skilled help as are the textile and machine trade industries.